

# **CALIBRATION WORKING GROUP**

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## **CONTENTS**

**Plan for Validation of Calibration Coefficients using Vicarious Calibration (VC)**

**Joint VC Campaigns**

**Measurements of SBRS Spherical Integrating Source (SIS)**

## **VALIDATION PLAN**

**Reflectance-based (solar-reflective range)**

**Radiance-based (total range)**

**Cross comparison between sensors**

## **PROPOSED INTENSIVE CAMPAIGN DURING A&E**

**This and the following charts assume no weather interference**

**3 radiance-based at high reflectance**

**4 radiance-based at low reflectance**

**6 reflectance-based for 250-m bands at high reflectance**

## **PROPOSED CAMPAIGNS FOR OPERATIONAL PHASE**

**Frequency depends on stability of MODIS.**

**Maximum frequency is likely to be:**

**Two high-reflectance-calibration campaigns at two-month intervals  
for 10 months of the year**

**One intensive field campaign**

**Total for year is 13 high reflectance and 4 low reflectance (not counting  
250-m bands)**

## **PROPOSED SENSOR CROSS COMPARISONS**

**Primarily between MODIS and ASTER, Landsat-7, and MISR**

**Conducted at times of above campaigns**

**Frequency depends on MODIS stability, could be increased if  
necessary**

# **FIRST JOINT VC FIELD CAMPAIGN**

**To compare TOA radiances**

**Held at Lunar Lake and Railroad Playa early June 1996. Participating teams:**

<b>Japanese:</b>	<b>ASTER</b>
<b>JPL:</b>	<b>ASTER</b>
<b>JPL:</b>	<b>MISR</b>
<b>South Dakota State University</b>	
<b>University of Arizona:</b>	<b>ASTER and MODIS</b>
<b>University of California at Santa Barbara</b>	<b>MODIS</b>

## **PRELIMINARY RESULTS**

**Several differences found between teams**

**Many of these now understood or resolved**

**Others need further study:**

**cross comparisons of panel BRDFs**

**radiometer calibrations**

**RTC comparisons**

**Agreement needed on values for exoatmospheric  
irradiance**

## **FUTURE PLANS**

**A second campaign is planned for next year involving greater international participation and organized by the EOS Calibration Scientist.**

**Details of the campaign are to be developed in the next few months.**

# **PROPOSED: ASSIST SBRS ABSOLUTE RADIANCE CALIBRATIONS**

**Broadly discussed with SBRS - implementation details TBD**

**Simultaneous measurements will not interrupt SRBS calibrations**

**Rebuilds tie-in with August 1996 Calibration Cross Check**

- measure VNIR and SWIR MODIS bands**
- tie-in with MISR, ASTER, OCTS, LANDSAT**

**Verify SIS and MODIS SNR characterization**

**Verify SIS and MODIS radiometric stability**

- during ambient and T/V calibrations**
- before and after vibration testing**

**Other possibilities**

- verify MODIS linearity**
- post facto radiance accuracy improvement**
- determine air-to-vacuum effect on D1 dichroic, i. e. responsivity change**

## BANDS COVERED BY UNIVERSITY OF ARIZONA RADIOMETERS

<u>VNIR</u>	<u>MODIS BAND</u>	<u>SWIR</u>	<u>MODIS BAND</u>
413	8	1244	5
442	9	1380	26
488	10	1646	6
550	12	2135	7
667	13	2164	
747	15	2208	
868	16	2263	
		2332	
		2403	

# SIGNAL/NOISE - SBRS SPHERICAL INTEGRATING SOURCES

Mean (dark corrected) / Standard Deviation

<u>SPHERE LEVEL</u>	<u>410 nm</u>	<u>870 nm</u>	<u>1240-2130 nm</u>
Level 1 (10 8W, 9 45W, 18 200W)	1500	3000	>2500
Level 2 (10 8W, 9 45W, 6 200W)	1600	4000	>2500
Level 3 (10 8W, 6 45W, 0 200W)	1100	2300	>2500
Level 5 (10 8W, 0 45W, 0 200W)	250	1070	>2500
Landsat SIS (B)	2000	6500	
U of AZ SIS [< Level 1, > Level 2]	6000	70000	>10000
<b>Data Average:</b>	<b>100 readings / 20 sec</b>	<b>100 rdgs / 30s</b>	

Data from Stuart Biggar and Paul Spyak, University of Arizona Remote Sensing Group, Sept 1996

## STABILITY - SBRS MODIS SIS and U of A SWIR TR

Stability over several hours, lamps on continuously

<u>Wavelength</u>	<u>Change %</u>
1244	- 0.04
1380	+ 0.23
1646	+ 0.03
2135	+ 0.11